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CONSERVATION OF THE TUNA RESOURCES OF THE  
WESTERN AND CENTRAL TROPICAL PACIFIC

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CONSERVATION OF THE TUNA RESOURCES OF THE  
WESTERN AND CENTRAL TROPICAL PACIFIC

1. The Commission's Tuna and Billfish Assessment Programme is scheduled for completion on September 30, 1984. In view of this, Governments may need to consider the requirement for oceanic fisheries resource surveys and assessment and decide whether the Commission has a future or ongoing role in this field.
  2. The conclusions and recommendations from previous discussions on the region's needs for the assessment of fisheries for the highly migratory species, and the possibility of establishing a broadly based fisheries organisation may need to be considered in the light of achievements by the Skipjack Survey and Assessment Programme, its successor the Tuna and Billfish Assessment Programme, and the ongoing activities of other regional organisations. Recent changes in tuna fisheries throughout the region, particularly the dramatic increase in purse-seine catches and the apparent decline in longline catch rates of yellowfin tuna indicate a need for careful consideration.
  3. As the Tuna and Billfish Assessment Programme will terminate before the Twenty-fourth South Pacific Conference, a decision needs to be taken by the Twenty-third South Pacific Conference in Saipan, the last Conference before the completion of the Tuna and Billfish Assessment Programme. The attached working paper does not constitute a proposal by the Secretariat for the most appropriate course of action, nor is it a Secretariat position paper. It is circulated purely as a basis for discussion.
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THE REQUIREMENTS FOR CONSERVATION OF THE TUNA RESOURCES OF THE  
WESTERN AND CENTRAL TROPICAL PACIFIC

R. E. Kearney

1. Introduction

The numerous species of tuna and other highly migratory fish constitute the most valuable known renewable resources for the island countries of the western and central Pacific. Annual tuna catches in the area of the South Pacific Commission (SPC) have exceeded 300,000 tonnes annually with a raw fish value approaching \$US400,000,000. Even though total catches from the 200-mile zones of some island countries of the area have been great, the value in some cases exceeding the gross national product, most of this catch has been taken by fishing nations from outside the region. It is only in very recent years that coastal states have begun to benefit from the harvesting of these resources by distant-water fishing nations and to become involved in the management of the fisheries for them.

Discussions on regional approaches to fisheries matters have been conducted throughout the western and central Pacific for many years, but intensified in the late 1970s with the consideration of the establishment of a South Pacific Regional Fisheries Organization. Early on in these discussions the Director of the South Pacific Bureau for Economic Co-operation summarised views of governments of the region - "In considering the need for and the functions, constitution and membership of, a possible South Pacific Regional Fisheries Agency, two different types of organisation have been broadly distinguished. One would aim primarily at ensuring conservation and promoting optimum utilisation of the living resources throughout the sea in which they occur, as envisaged in the revised single negotiating text under consideration by the United Nations Conference on the Law of the Sea. The other would aim primarily at ensuring maximum benefits for the peoples of the coastal countries in the region and for the region as a whole" (Unpublished SPEC document 1977). This essential division of regional fisheries activities continues to be recognised by the countries of the region in the allocation of resource assessment and conservation responsibilities to the South Pacific Commission, and the pursuit of the economic, legal and political interests of member governments in fishery matters to the Forum Fisheries Agency. In view of the scheduled completion in September 1984 of the SPC's programme on highly migratory species, the Tuna and Billfish Assessment Programme, there is need to again consider the long-term regional requirements and what action might be necessary to meet them.

## 2. The evolution of arrangements for tuna management in the region

In the early 1970s there was a boom in skipjack fishing in the western and central Pacific caused by the expansion of the activities of the Japan-based distant-water skipjack pole-and-line fleet into this region, and the establishment of several locally based joint venture skipjack fisheries. Skipjack catches from the region increased from a few thousand tonnes to more than 200,000 tonnes between the late 1960s and the mid 1970s. The countries and territories of the region were quick to realise the urgency of obtaining more information on these fisheries and assessments of the resources on which they were based. In response to these requirements, the South Pacific Commission in 1974 established the Expert Committee on Tropical Skipjack, under whose auspices proposals for the survey and assessment of the resource base were rapidly developed (Anon 1975). Subsequently, the Skipjack Survey and Assessment Programme and its successor, the Tuna and Billfish Assessment Programme, were established as externally funded parts of the work programme of the Commission. The agreed objectives of these programmes are to survey the resources, ascertain stock structure, migration patterns and population parameters of skipjack and other major species, thereby enabling the determination of the status of the stocks and the degree of interaction amongst the numerous fisheries exploiting them. This information is provided to members of the South Pacific Conference as the basis for further development and management of tuna and billfish resources within the region.

As the tuna fisheries of the region continued to develop, and acceptance of the principles of extended fisheries jurisdiction increased, the potential for Island States to become increasingly involved and to derive significant economic benefit from a co-ordinated approach to further development led to the establishment in 1979 of the South Pacific Forum Fisheries Agency (FFA). The objectives of the FFA, as outlined by the first meeting of the Forum Fisheries Committee, were to facilitate the provision of maximum benefits to the peoples of the region through the co-ordination and harmonisation of policies on the Law of the Sea and fisheries development, and by a co-ordinated approach in relations between members and distant-water fishing nations and improved surveillance and policing of the activities of foreign fishing vessels (Anon 1979).

Since the establishment of the SPC programmes and the FFA there have been several regional meetings to consider the institutional arrangements for tuna fisheries management, and in particular, the desirability and feasibility of establishing a more broadly-based fisheries organisation.

The most recent meeting convened specifically for this purpose was held in Suva, Fiji in February 1980 as a response to a South Pacific Forum directive. This meeting agreed "that in the first instance the region required a program of research and development on highly migratory species aimed at resolving problems such as the number, size and distribution of tuna populations, the need for conservation and regulation of such stocks as well as improved methods of fishing. It was noted that any programme would need to run for 5-10 years before any significant results could be expected. The meeting noted that a significantly expanded scientific research programme, whether under the aegis of a new broadly based organisation or conducted by existing inter governmental bodies, would be expensive. There were not only establishment costs but also running costs in future years to be considered in the case of an international organisation. In addition to Forum governments, finance for such research might be obtained from DWFNs (distant-water fishing nations) eligible to participate and international bodies."

"In considering institutional arrangements to undertake and co-ordinate the desired research and development the meeting concluded that as a first step this would best be carried out in the form of a special programme within the broad existing framework of FFA and SPC" (Anon 1980). Such a regional research and development programme was subsequently identified by meetings of the Forum Fisheries Committee. The unequalled importance of resource survey and assessment as a foundation for all rational resource development, management and conservation was acknowledged by this committee in according the SPC's Tuna and Billfish Assessment Programme priority one in an ordered list of 30 projects\* required for the region.

It is significant that the meeting considering the establishment of a broadly based body considered that the existing framework of the SPC Skipjack and Tuna Programmes and the FFA were adequate in the short term, while at the same time agreeing that "the desirability of establishing a separate broadly based fisheries organisation at some appropriate time in the future should be left open". As the Commission's commitment to work on the highly migratory fish resources of the region could conclude with the scheduled termination of the Tuna and Billfish Assessment Programme on 30 September 1984, the most appropriate method of meeting the requirements of the countries and territories of the region after this time needs to be identified and pursued. In so doing, it is necessary to review the requirements of the countries and territories and the methods presently employed to meet the needs, to specify the measures necessary to continue and improve these after September 1984, and to identify and activate acceptable and cost-effective procedures for implementing them.

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\* These 30 projects were subsequently assigned to one of eleven categories.

3. The requirements for resource evaluation and conservation and the present arrangements

A sound knowledge of the distribution, availability, biology and status of the stocks of the exploited species of the region and the effects of fishing on these stocks is a prerequisite for management for resource conservation purposes. Consequently, procedures for obtaining such information on the major commercial species of the region dominate the tasks assigned to the SPC's Tuna and Billfish Assessment Programme. The highest priority of these, the development of a regional statistical programme, has, as directed, been pursued as the primary objective with the result that the statistical service is now completely operational. The programme processes catch and effort data sheets submitted by distant-water fishing nations to the countries and territories for which the Commission works. In addition, a regional compilation of all catch and effort by one degree square per month is maintained. These data, in combination with relevant tag release and recovery information and additional biological data obtained from numerous sources, form the basis for evaluation of the magnitude of the total resources, status of the stocks, and the interactions amongst the numerous fisheries exploiting these stocks.

Results from the SPC programmes have shown that the skipjack resources of the region are immense, standing stock of approximately 3,000,000 tonnes, and have a high natural turnover, indicating that total catches from the region could be increased at least several times above existing levels. Commission scientists have, however, emphasised that the resource is not infinite and the various fisheries exploiting skipjack do interact. It has been stressed that maximum harvests can only be taken if fishing effort is wisely distributed across the region. of the resource. Furthermore, interaction between fisheries will increase as fishing effort increases and fishing areas expand, necessitating careful evaluation of optimum fishing levels which are unlikely to correspond to those which would produce maximum total catches.

Preliminary evaluation of the yellowfin tuna resources by the Tuna Programme suggest that again the standing stock is greater than previously estimated. However, there have recently been phenomenal increases in purse-seine catches of this species and, at the same time, a decline in catches by longline vessels. There is concern that total exploitation of this species in the western Pacific might already have reached levels where conservation measures are necessary to optimise catch rates or perhaps even to maximise total yields. There is at present no mechanism for coastal states and distant-water fishing nations to co-operate on the initiation or implementation of conservation measures, even though representatives of both groups have undertaken unilateral action to optimise returns from tuna fisheries in the region.

4. Measures necessary to improve the present systems and ensure more permanent arrangements

While the present statistical programme provides an invaluable service to the countries which require analyses of data submitted to them by distant-water fishing nations, it does have severe limitations, most of which are related to the principles underlying its creation. The statistical programme was initiated within the Tuna Programme of the SPC for two main reasons; firstly, because, in the absence of a broader based fisheries organisation there was no alternative for meeting the urgent need for centralised collation of information on the fisheries exploiting the regional resources, and secondly, because the countries of the region did not individually have facilities for the processing and analysis of data submitted to them by foreign fishing nations under the conditions of access to the zones of the coastal states. The existing system is therefore basically a service to the coastal states and, while it also generates a centralised compilation of statistics from vessels registered in coastal states and data submitted by distant-water fishing nations to the individual countries, it by no means covers all of the fishing effort operating on the total distribution of the resources of the highly migratory species. It therefore does not provide access to all of the data necessary for resource evaluation and subsequent conservation. Basic deficiencies are that it has no mechanism for obtaining accurate statistics from fisheries which operate in areas adjacent to the 200-mile zones of Pacific Island States, or perhaps more importantly, in the numerous high seas enclaves which are interspersed throughout the area of the South Pacific Commission (Figure 1). As a result, it is not possible for Commission fisheries statisticians to accurately assess the total magnitude and distribution of fishing effort and catch even within the area of the Commission. Furthermore, as the statistics have gaps for each vessel whenever it fishes outside the zone of a coastal state, the composite catch figures are normally less than the total catch by the vessel on each trip. Consequently, unloading statistics, even if available, could not be used to validate figures of reported catches.

As the primary purpose of the statistical programme is a service to Island Governments, it partially covers the requirements of a common interest, coastal state group. It is not of great value to the distant-water fishing nations. In fact it has been argued that, as results from it are used by coastal states in access negotiations with extra-regional countries, it has operated to the detriment of the interests of distant-water fishing nations. There is therefore no commitment from some of these distant-water nations, which catch approximately 90 per cent of the highly migratory species taken within the region, to provide information other than the minimum required in individual bilateral access agreements. A great deal of necessary data on catches is therefore not available to the Commission, and therefore not to the Island Governments.

The shortcomings referred to above have arisen largely because the present statistical programme is a compromise between a system designed to generate the data necessary for sound resource conservation and management, and one created to process and summarise data generated in compliance with access agreements entered into to increase economic returns to coastal states. In fact, the irreconcilable differences between broadly based resource conservation and management, and generation of maximum economic returns to coastal states are largely responsible for the inadequacy of the present system for either purpose.

Comprehensive statistics can only be obtained with the full co-operation of all parties involved in the fisheries. This can only be done if all countries involved ensure that all vessels provide complete statistical reports, that is all countries must formally agree to a common reporting format and procedure covering the total area of distribution of the resource. There must also be mechanisms for the checking of all information provided.

Such a system will only be acceptable to all parties if; the purpose for which the data is to be used, that is the conservation of the resources to provide maximum yields, is agreed to by all; the confidentiality of data provided by individual vessels or other categories as may be agreed upon, is inviolate; and all contracting parties are equally involved in the decision making leading to any management measures for conservation purposes. There is little problem obtaining unanimous agreement in principle on the need to conserve the resources and of the need for accurate data to enable the assessment of these resources. The requirement for rigid guarantees of the confidentiality of all data by all contracting parties can also be assumed. Such confidentiality has been observed for more than 20 years by the Inter-American Tropical Tuna Commission (IATTC) in its management programme for the tuna resources of the eastern Pacific and a similar system for data collection and checking could be established for the western and central Pacific. This system could be modelled on that developed by the IATTC or modified from the SPC's statistical programme, which has also operated under conditions of strict confidentiality. The requirement for all contracting parties to be equally involved in decision making would necessitate wider membership than that of the South Pacific Conference, with the need to include at least Japan and Korea at this time and to accommodate further expansion in membership if the tuna fisheries in the region expand as anticipated.

#### 5. Possible procedures for reaching these objectives

The requirements described in (4) above, can be summarised as: a statistical and research capability to generate the necessary scientific data and to obtain accurate and comparable information from all vessels exploiting the resources in the region; a procedure for cross-checking total catch and catch composition data against actual vessel unloading; facilities for the processing of this information and for the monitoring of the status of the exploited stocks and the effects of the numerous fisheries on them; a mechanism for facilitating agreement by all parties concerned on any resource conservation or management measures necessary.

The attainment of these would be dependent on the operation of a central secretariat with adequate staff and facilities for the necessary biological research and analysis, and data processing, and for the subsequent generation of conservation and management alternatives for consideration by a governing body. The governing body itself could only be completely effective if it had the membership and support of all interested parties.

In considering possible requirements for the secretariat it is relevant that the staff of the SPC's Tuna Programme (or its predecessor, the Skipjack Programme) was adequate to carry out assessments of the regional resources of skipjack and other selected species based on all available biological and statistical data, and to establish and operate a regional statistical programme to process and analyse data generated from vessels operating within the 200-mile zones of Island countries. To undertake the processing of the additional catch and effort data necessary to give comprehensive coverage of the region would require only minimal increase in data processing personnel, but establishment of the necessary capability for validation of unloading statistics would require recruitment of several relatively junior personnel in key unloading ports such as Pago Pago, Guam, Yaizu and San Diego. Annual expenses for the SPC's Skipjack and Tuna Programmes have ranged between \$US340,383 and \$US1,236,962, depending on the state of development of the programmes and the amount of fieldwork necessary in any year. Average expenditure over the seven years of these two programmes will approximate \$US756,000. The increased data generation, processing and checking responsibilities, including establishment of technicians in four selected ports around the Pacific, suggests that an annual budget of between \$US900,000 and \$US1,100,000 would be appropriate for 1985. This compares favourably with the budget of the IATTC of \$US2,258,360 in fiscal year 1980/81 (Anon 1982).

A budget of \$US1,000,000 would represent a commitment of approximately \$US3 per tonne, or 0.3 per cent of the average value of tuna taken from the region. Payment of a levy of this order would not constitute a major problem for most of the governments whose vessels fish within the region. However, if joint venture vessels were considered the responsibility of the coastal states in whose waters they operate, then a country such as Solomon Islands could face an annual payment of the order of \$US50,000 (17,000 tonnes at \$US3 per tonne or 20,000 tonnes x 0.3 per cent of \$US800). As the statistics and methods for accurate cross-checking of catches from vessels which operate solely within the waters of the country in which they are based are already comprehensive and more than adequate for resource conservation and management, it could be appropriate for their catches to be excluded from the assessed levy. An appropriate way of doing this might be to divide the cost of operating the resource conservation and management operation amongst those nations whose vessels take fish within the region from areas other than their own 200-mile zone. Or it may be more appropriate to opt for the system operated by IATTC whereby countries contribute a percentage of the budget based on their utilisation of the tuna taken, regardless of the nationality of the vessel which captured it. Both of these systems would result in minimal or no cost being met by Island governments while either would mean that most of the operating costs would need to be met by Japan and the United States of America with the next largest contributor probably being the Republic of Korea.

While extra-regional fishing nations, such as Japan, have an obvious interest in the conservation and management of the resources under consideration, they would likely find it difficult to contribute to a scheme as outlined above, unless they were full members of the organisation responsible for conservation measures. This again raises the problem of the present lack of any organisation, fisheries or otherwise, which has active membership of all necessary parties, that is the coastal states of the region and the countries which do the greater part of the fishing.

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